

USGS National Hydrography Dataset Newsletter
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by Jeff Simley, USGS

New NHD Newsletter Mailing List

The NHD Newsletter is now being distributed by a gmail email system and there may be some disconnects between the new and old systems. Some people may be getting the Newsletter unintentionally and some who should be getting are not. To resolve any issues, contact Jeff Simley at jdsimley@usgs.gov.

World Water Day

Today, March 22, 2013, marks the 20th anniversary of the first World Water Day, a day established by the United Nations to focus attention on the importance of fresh water around the globe. See <http://www.unwater.org/water-cooperation-2013/home/en/>

NHD Update tool for ArcGIS 10.X by Paul Kimsey

The NHD Update toolbar v5.0.1.15 (ArcGIS 10.0) was officially released to the stewardship community on March 11, 2013. NHD Update toolbar v6.0.1 (ArcGIS 10.1) is currently undergoing further development/enhancements and Beta testing will begin as soon as possible.

Downloads of NHD Data from the USGS in February

During February there were 1,450 downloads of state-based high resolution NHD and 150 medium resolution downloads using file geodatabase. There were 1,294 subregion high resolution downloads for file geodatabase and 139 downloads for personal geodatabase, with 380 medium resolution downloads for file based and 50 for personal. That's a total of 3,463 datasets. To give an idea of the geography this represents, it is the equivalent of over 2,100,000 quadrangles of coverage, all in a single month. Also during the period there were over 6,250 downloads from The National Map viewer, the majority by rectangle extracts of various sizes. That brings the download total to 9,713 for February.

March 2013 Status Report for NHD Network Improvements by David Kraemer

This month the following Regions were completed for the Network Improvement project: 6, 10, and 14. Previously four Regions were completed for the Network Improvement project: 9, 16, 17, and 18. The State of Minnesota was completed in November, 2012 (parts of Regions 4, 7, and 9). The team is working in Regions 1, 3, 5, and 15 plus rechecking Final QC for jobs run with the older version 5.0.0 tools in Regions 11, 12, and 13.

Region Completion Percentages

01 – 25%	03 – 45%	04 – 05%	05 – 45%	06 – 100%	07 – 95%
09 – 100%	10 – 100%	11 – 75%	12 – 75%	13 – 75%	14 – 100%
15 – 40%	16 – 100%	17 – 100%	18 – 100%		

Current Issues: Version 5.0.2.0 of NHD Tools was released in-house on March 8. The previous tools version had issues producing valid Final QC results; so jobs between December 12 and February 13 are being rechecked. The first six weeks of those jobs were already submitted back to the Geodatabase; so new jobs will be created to recheck the edits. The completion percentages have been decreased to reflect this additional work.

The Network Improvement project has returned to working the lower 48 states from west to east, since Region 3 is no longer a high-priority. As in-house projects and external partners check-in their jobs then the Network Improvement project will finish the Regions that are not complete.

The Alaska Hydrography Database Project by Erik Johnson and Mike Plivelich

The Alaska Hydrography Database project (AK Hydro) was initiated in southeast Alaska in 2010 to streamline hydrographic mapping efforts amongst agencies while simplifying the NHD update process for local resource and GIS specialists. The project is a joint effort amongst the Forest Service, Alaska Department of Fish and Game (ADF&G), Alaska Department of Environmental Conservation (DEC), Kenai Watershed Forum, U.S. Fish and Wildlife Service (USFWS), U.S. Geological Survey (USGS), and the University of Alaska to manage fish, stream, coastline, and water body data. Since 2010, the project has been addressing long standing data management issues in Alaska where each agency has been independently mapping and maintaining its own set of hydrography data that were incompatible and, at times, inconsistent with one another.

The University of Alaska plays a key role serving the state and federal agencies by managing the shared hydrography databases and incoming edit transactions. The University of Alaska also provides NHD editing and updating services to partnering agencies. The partnership with the University of Alaska allows, for example, the Forest Service to meet agency goals, including using NHD in *Natural Resource Manager*¹ applications and in national map products such as *FSTopo*², while meeting local business requirements such as modeling anadromous fish habitat and supplying intertidal stream information. As updating the NHD requires a specific technical skill-set practiced on a regular basis (especially via the conflation process), AK Hydro streamlines the task by centralizing NHD maintenance services at the University of Alaska. In doing so, the partnering agencies no longer have to run complex NHD conflation processes on an irregular basis, freeing up resources for other work activities.

AK Hydro consists of a series of collaboratively designed, shared, and maintained regional GIS databases containing hydrography data residing within the University of Alaska system. The southeast and south central versions of AK Hydro are based at the University of Alaska Southeast in Juneau and provide a rich suite of bio-geographical information including:

- Aquatic organism and habitat data including fish observations collected during field sampling, locations of potential barriers to fish passage (i.e., bedrock waterfalls), locations of engineered fish passes, and locations of suitable anadromous fish habitat;
- Physical features such as rivers, streams, glaciers, lakes, dams, intertidal areas, estuaries, salt chucks, as well as minimum low-tide, maximum high-tide, and mean-high-water shorelines;
- Stream geomorphology information including fluvial process groups, stream channel gradient, stream pattern, stream bank incision, and stream containment;
- Regulatory fishing information integrated from the state's Anadromous Waters Catalog;
- Stream networks; which allow upstream or downstream tracing from dams, gauges, fish barriers, and contaminants.

¹ Natural Resource Manager (NRM) has project management and development responsibility for many Forest Service national applications used to manage the agency's natural and physical resource data.

² FSTopo is a database-driven web application that enables the creation and downloading of large scale topographic maps.

By working together and sharing knowledge, the Forest Service and its partners are able to better manage the public's resources and provide richer information for scientific investigation. The University of Alaska is providing leadership and the delivery of services to partnering agencies as well as availing educational opportunities to its students so they can work on real world issues. Additional regional hydrography partnerships, or 'stewardship nodes', are being planned at the University of Alaska Fairbanks and additional partners, including the National Park Service, will soon be coming onboard. Collaboration with additional partners is encouraged and desired. AK Hydro serves as an exemplar for collaborative data management which can be applied to other business areas including transportation, recreation, and terrestrial ecology.

AK Hydro received a Special Achievement in GIS (Geographic Information Systems) award at the 2011 Esri International User Conference in San Diego. The award is given annually to recognize outstanding work with GIS technology and the AK Hydro project (then termed the *Southeast Alaska Hydrography Project*, or *SEAK Hydro*) stood out from more than 100,000 others. For more information on AK Hydro please visit the UAS Southeast Alaska GIS Library website: <http://seakgis.alaska.edu/>

Marin County California NHD Developments – by Brian Quinn

In the past year, Marin County has made use of USGS LiDAR (countywide, 2 spot/m²) and fused it with other LiDAR sets to create a new gridded surface. That new topo-bathy surface has been ready since the end of November, and it's used as a 1-meter surface for ArcHydro runs to create flow lines. The local consortium MarinMap did a buy-up on the 2011 USGS Imagery For the Nation that was rectified against the LiDAR data. MarinMap now has outstanding 15cm natural color orthophotos that inform vertical alignment of built features.

In the urban areas, hydrologic enforcement features are used to represent a low-flow functional model of the storm drain systems, where everywhere has a single path down and high-flow bypasses are not modeled. In a somewhat excruciating process, Marin County is aligning the best GIS-viewable storm drain data with the DEM, and using the 15cm ortho plus Google StreetView to interpret street drains and the correct manhole covers. In flatter areas, the county includes suburban curb gutters as enforcement ditch features.

The goal is now to approach 1:2,400 map accuracy standards with the enforcement features, largely based on the USGS LiDAR and USGS IFN imagery. This accuracy is being approached by developing enforcement features and tracing stream channels from DEM beneath trees at about 1:250 screen viewing scale. Enforcement features are still being used to burn paths in a 1-meter DEM for ArcHydro. Although they aren't substituted for flow line geometry, enforcement features are used to inform pipe vs. ditch vs. channel FCodes in the modeled flow lines.

The intensive hydro-enforcement features themselves, rather than the modeled flow lines, are of interest as a way to improve suburban storm drain system mapping. This entices some Public Works support to help them with a more complete inventory for GASB 34 compliance; support is stronger from toxic spill response groups and less strong from flood control groups.

As before, refinements to NHD flow line geometry and completeness are motivated to inform creek protection ordinances that are imposed on new development. Marin County's ordinance regarding Stream Conservation Areas will be updated by this summer. Although it still contains language referring to setbacks from "stream bank", the updated ordinance has optimistically included reference to NHD flow lines as geometry by which projects are screened for impacts on creeks. For creek *protection* purposes, Marin County would like to contribute flow line geometry to NHD that has been prepared at a scale suitable for overlay with parcels and building footprints.

New version of the Hydrography Event Management (HEM) Tools for ArcGIS 10.1

A new version of the Hydrography Event Management (HEM) Tools for ArcGIS 10.1 (version 2.6) is now available via <http://nhd.usgs.gov/tools.html#hem>.

Geospatial Platform

The partner agencies of the Federal Geographic Data Committee (FGDC) are developing a Geospatial Platform to more effectively provide place-based products and services to the American public. The Geospatial Platform will be a managed portfolio of common geospatial data, services, and applications contributed and administered by authoritative sources and hosted on a shared infrastructure, for use by government agencies and partners to meet their mission needs and the broader needs of the Nation. Federal agencies and their partners collect and manage large amounts of geospatial data - but these data are often not easily found when needed or accessible in useful forms. The Geospatial Platform provides ready access to federally maintained geospatial data, services and applications. The content of all datasets and services demarcated with the Data.gov globe have been verified by the Agency to be consistent with Federal privacy, national security, and information quality policies. As an additional service to users, the platform also provides access to data from partners across State, Tribal, Regional and local governments as well as non-governmental organizations.

Go to the Geospatial Platform web site <http://www.geoplatform.gov/home/> and click on Gallery. Then click on National Hydrography Dataset. This will zoom the Geospatial Platform to Lake Dillon Colorado, showing the NHD features. You can pan and zoom in and out to move anywhere in the country. As you zoom out the NHD features will disappear, but then reappear when zooming back to the right scale. Notice the display of the Watershed Boundary Dataset.

The National Map User's Conference

Due to the mandatory budget cuts from sequestration, the U.S. Geological Survey has postponed [*The National Map Users Conference and USGS Community for Data Integration Workshop*](#), May 21-24, 2013 in Denver. The USGS regrets any inconvenience this postponement has caused, and look forward to continued service with our data users, partners, customers and the public. More information: http://nationalmap.gov/tnmuc_cdiworkshop/

NHD Photo of the Month

This month's photo is in anticipation of April Fool's Day on April 1. It depicts the struggles fish can face passing through culverts, a major application of the NHD. To see the photo of the month go to http://nhd.usgs.gov/photo_month.html Submit your photo for the NHD Photo of the Month by sending it to krisham@usgs.gov. This will allow the program to build a library of real-world photos linked to the NHD.

February Hydrography Quiz / New March Quiz

Steve Shivers of the U.S. Geological Survey was the first to guess the February NHD Quiz as Bristol Lake in southern California. See <ftp://nhdftp.usgs.gov/Quiz/Hydrography91.pdf>.

Others with the correct answer (in order received) were: Matt Rehwald, John Kosovich, Roger Barlow, Dan Button, Evan Hammer, Ken Koch, and Tom Denslinger.

Tom notes: The answer to the quiz is Bristol Lake located in San Bernardino County, California. The lake is a dry lake located in the Mojave Desert. There is a salt evaporator operation in the dry lake bed and is in the area of the closely spaced diagonal lines in the approximate center of the quiz map. According to Wikipedia the lake is 14 miles long and 12 miles at its widest. The NHD lists the waterbody area as 161.55 Square Kilometers or 62.37 square miles equivalent to about 39,920 acres.

This month's hydrography quiz can be found at <ftp://nhdftp.usgs.gov/Quiz/Hydrography92.jpg> . What is the name of the orange feature running horizontally across the image. The big blue features it connects on either side are estuaries. Send your guess to jdsimley@usgs.gov.

Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Thanks to Charley Hickman, Paul Kimsey, David Kraemer, Erik Johnson, Mike Plivelich, Brian Quinn, Ariel Doumbouya, and Kathy Isham.

The NHD Newsletter is published monthly. Get on the mailing list by contacting jdsimley@usgs.gov.

You can view past NHD Newsletters at http://nhd.usgs.gov/newsletter_list.html

Jeff Simley, USGS, assumes full responsibility for the content of this newsletter.